New Power Generation in Alberta

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Introduction

Alberta's new, competitive power industry is attracting developers and investors who see opportunities for new power generation in the dynamic and diversified Alberta economy. *New Power Generation in Alberta* is designed to give developers an overview of the process of gaining approval for new projects or expansion of existing generation.

In the past six years, independent generators have built more than 3000 megawatts of capacity in Alberta. The province will continue to welcome new projects and developers to meet its growing needs in the future.

New Power Generation in Alberta outlines:

- How Alberta's deregulated generation industry opens up opportunities.
- The roles and relationships of the agencies involved in approving projects.
- Approval processes, including where to get necessary approvals, information that may be required, and how to expedite the process.

This document is an entry point for developers. It does not provide an exhaustive listing of all requirements and actions that may need to be considered. Requirements, approvals, documentation and other matters can vary according to the specifics of each project.

Additional information about Alberta's electric industry is available elsewhere on this Department of Energy website, (www.energy.gov.ab.ca). This includes:

- Background on restructuring of Alberta's electric industry and the Electric Utilities Act.
- Background on Alberta Energy's structure and current initiatives.
- Data on Alberta's generation capacity and new generation being added to the system.
- Links to key industry organizations.

Section 1—Opportunities for new generation

The restructuring of Alberta's electric industry opened the doors to a competitive market for electric power generation across the province. Barriers to entry into the generation market that existed in the former regulated structure have been dismantled to allow independent power producers to compete on an equal basis.

In this new marketplace, the Alberta Energy and Utilities Board (EUB) is no longer responsible for determining whether new power generating facilities are needed. That need is now determined by the open, non-discriminatory and competitive Alberta market where anyone can build new generation.

Producers access the competitive market and the transmission system through the Alberta Electric System Operator (AESO). AESO's principal functions include:

- *Providing fair and open access to the Alberta transmission grid.* The AESO oversees the use Alberta's Interconnected Electric System (AIES) to ensure fair rates, non-discriminatory access for all market participants and the safe, reliable operation of the system.

  The AESO is independent of any industry affiliations and owns no transmission assets. It contracts with transmission facility owners to acquire transmission services and provide customer access.

- *Providing an open-access, competitive market for electric power.* The AESO operates a spot market in which prices are set every hour at the price that brings on enough supply to meet demand.

- *Operating the System Coordination Centre.* The System Coordination Centre is the heart of AIES. The System Coordination Centre opened in early 1999 and operates independently of market participants. The centre features advanced technology, customized to meet the requirements of Alberta's competitive electricity market, and is staffed 24 hours a day, 365 days a year. Its system controllers are responsible for the real-time operations of the Alberta Interconnected Electric System. They dispatch all electric power generation in Alberta through the System Coordination Centre, schedule energy flow on the interconnections with neighboring control areas and monitor and direct the operation of Alberta's electricity network to ensure safe, reliable and economic operations.

Opportunities in Alberta's strong economy

More electric power will be needed in the coming years to handle forecast growth in Alberta, which continues to be one of the strongest economies in Canada. For 2004, most forecasters expect Alberta to be the fastest-growing province, with forecasts of growth ranging from 2.8 to 4.1 per cent (average is 3.6 per cent).

The province's population, now over three million, grew by over 8.5% over the five-year period 1998-2003. With the lowest unemployment rate in Canada (at 4.8% in December, 2003) and a growing economy, Alberta will continue to attract migration from other parts of Canada, sustaining population growth over the coming years.

Alberta's strength is its diversified and competitive economy in which primary resources including energy, agriculture and forestry, share the spotlight with the expanding manufacturing, service and advanced technology sectors. Forecasts conclude that strong growth will be led by

growing investment in oil sands, pipelines, petrochemicals, food processing, business services and the information-communications technology sector.

Investment in Alberta's oil sands is set to increase dramatically over the next decade. More than $45 billion in investment has been announced, much of it to take place over the next five years. Because of Alberta's oil sands, the NEB recently moved Canada up to the number two position behind Venezuela in terms of total discovered recoverable resources of crude oil and bitumen, while the US Energy Information Administration (EIA) ranks Canada as number two behind Saudi Arabia.

Technological improvements and the provincial royalty regime have been major factors underlying the unprecedented increase in new oil sands investments.

Alberta's natural gas reserves are also significant to the province's economy. The availability of natural gas supports the growth of new electrical cogeneration projects using natural gas as a feedstock.

Alberta's existing electric supply

Alberta has a total capacity of 12,400 megawatts, including 950 megawatts that can be brought in over tie lines to British Columbia and Saskatchewan. There are more than 200 participants in Alberta's electricity market, trading between $3 and $5 billion annually.

Generation opportunities in Alberta's new marketplace

Alberta's dynamic electricity marketplace offers a variety of opportunities to prospective generators. Proponents can bring forward projects with a range of capacities (from small to large), using a variety of technologies and fuels. Commercial arrangements can also be different – participants can sell their energy through the AESO or negotiate agreements directly with buyers.

A variety of fuels and technologies

Cogeneration

Projects using cogeneration—the combined production of electric power and useful heat—account for a large share of Alberta's new capacity. The restructuring of Alberta's electric industry means that any business can build new generating capacity in Alberta and sell its excess power freely in the market. This has attracted a number of cogeneration projects.

Combined-cycle plants

A variation of the cogeneration process is combined-cycle plants. These use a dual approach to producing electric power. Power is produced from an initial generating process; the heat that is produced in this process is then used to operate a steam-driven generating process to produce more power. Combined-cycle plants are attractive as an upgrade to single cycle plants, since they can efficiently and cost-effectively use the heat by-product from the power generating process.

Green power

Alberta's new electric industry structure provides all electric power producers equal opportunity in the power generation market. This includes producers using renewable fuel sources as well as those using coal or natural gas.

As a result, a market is developing in Alberta for electric power from alternative sources such as wind, solar, hydro, biomass, peat and waste wood. Alberta is a leader in helping to launch development of renewable energy. For example, the 75 MW McBride Lake project in the Pincher Creek area is the largest operating wind farm in Canada.

A number of electricity retailers in Alberta offer 'green power' options to customers. Retailers, in turn, purchase electric power produced by Green Power producers to meet their arrangements with customers.

Flare gas

Electric power is also being generated from other non-traditional sources. One emerging trend is capturing waste gas from wells before it is flared and using it to generate electric power. Instead of this gas being flared and wasted, Alberta's new market creates opportunities for turning this by-product into a valuable resource.

A royalty waiver is now available on most solution gas when it is used to generate electric power instead of being flared. This encourages small-scale producers to use this resource productively. The royalty waiver removes a key economic hurdle to small-scale mini-turbine electricity production and encourages longer-term investments in new power generation.

A brochure entitled "Generation of Electric Power from Solution Gas Otherwise Flared" provides an overview of the approval process for flare gas generating facilities. The brochure is available on this Alberta Energy web site – see the "Industry" button at the bottom of the home page, and follow the links to "publications" and "brochures". Currently, there are about three dozen such plants in Alberta, totaling about 15 MW

A variety of commercial arrangements

Direct sales ("net settlement instructions")

Participants in Alberta's deregulated energy market do not have to sell their energy through the AESO power pool market. Instead, independent power producers may sell power directly to buyers such as industrial and commercial consumers.

Buyers who wish to participate in direct sales must be able to satisfy certain conditions set out in the Direct Sales Regulation (AR 180/99), as amended and the ISO Rules. These include having:

- Time-of-use meters that accurately measure the amount of electricity consumed in each hour or portion of an hour.
- The ability to respond to direction from the AESO to reduce consumption if required.
- A tariff that shows the cost of power purchases separately from other charges on the bill.

- System access from the local distribution system owner. (The distribution system owner obtains transmission system access from AESO for customers and for generators located in its service area.)

Stand-alone systems

If a power generating facility is being developed for the exclusive use of an owner who has no plans to supply excess power to the interconnected system, then some aspects of the approval process outlined in this guide may not apply.

Developers are advised to make inquiries to approval granting agencies to determine which approvals are required for their projects. Developers should also inquire about requirements for any approvals from these agencies in the future should developers later decide to sell power into the system.

Industrial systems

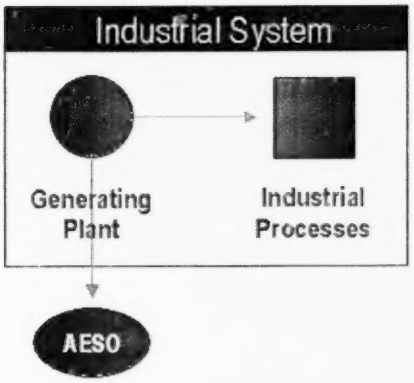
Many companies produce electric power for their own use as part of an integrated industrial process. The electric power produced and consumed by such 'industrial systems' is exempted from some provisions of the Electric Utilities Act.

For example, power produced by industrial systems does not have to be sold through the AESO, provided that it is used exclusively as the internal power supply for industrial processes. Approved industrial systems may be eligible for an exemption to the full province-wide transmission tariff.

This exemption encourages integrated industrial systems to develop their own internal electric power supply, if that is the most economic source of generation. The exemption also helps to keep Alberta industry competitive and contributes to the power supply available to all Albertans.

Businesses seeking an industrial systems designation for their power generation must obtain approval from the EUB. The EUB ensures that independent power generating systems are not developed simply to avoid paying a fair share of system costs.

Industrial system owners may also sell excess power beyond what is used for their internal electric power supply. Excess power from an industrial system would be exchanged through the AESO or sold through a direct sales agreement.



Access to Alberta's transmission system

Key to developing any independent power project is the ability to send power to customers across a safe, reliable transmission system. Transmission also serves the public interest through delivery of reliable, economic electric power to Albertans living and working throughout the province.

The Alberta Interconnected Electric System (AEIS) functions as a single entity overseen by the AESO. This independent body is responsible for ensuring that the transmission system is reliable and efficient, and that access to the system is provided in a fair, open, transparent and non-discriminatory manner.

"Open access" means that the transmission system is available to all power producers on the same terms. In order to connect to the system and to trade energy in the power pool spot market, all market participants must have a system access agreement with the AESO.

How transmission is paid for

The system access tariffs for connecting to Alberta's transmission system are designed to recover costs such as:

- Capital –Transmission must be upgraded to ensure that consumers are served with reliable electricity and to support continued generation development and economic growth in Alberta
- Operations and maintenance – Transmission facilities must be maintained throughout the whole province of Alberta.
- Ancillary Services – A transmission system depends on more than just power lines and transformers to deliver power. The system must also deliver power at stable voltages. It therefore requires ancillary services such as "spinning reserve" and automatic generation control to maintain the system within narrow tolerances as load rises and falls. A transmission system also loses a certain amount of power in delivery across long distances.

The AESO contracts with various owners of transmission facilities across the province to provide service to customers and to energy producers. Based on these costs for building and maintaining the system, as well as the costs of providing other ancillary services, the AESO develops tariffs for both load-using customers and generators.

These costs and tariffs are reviewed by the Alberta Energy and Utilities Board (EUB). The EUB regulates all aspects of delivery service – including high-voltage transmission and local distribution – to ensure safe, reliable system services in the public interest. As well as approving the AESO's system-access tariffs, the EUB reviews and approves distribution tariffs for local utilities.

The following key concepts are central to setting transmission rates in Alberta:

- *Transmission loads pay "Postage-stamp Rates"*
  Distributors are charged the same tariff for transmission system service, no matter their location from power generating sources. This ensures that transmission rates paid by consumers are based on a system-access tariff that is independent of where they are located in the province.
- *Charges to generators are location-based*
  Generators may receive location-based charges or credits, based on their location. This approach encourages suppliers to locate facilities for the maximum efficiency of the interconnected system.
- *Costs of upgrades to the system are shared by generators*
  Beginning in 2006, new generators will make an upfront financial commitment towards upgrades of the transmission system, based on their size and location on the system. This initial contribution will be refunded over a subsequent period. It ensures that the transmission system doesn't incur costs for a project unless there is a long-term commitment to operate.
- *Import and export tariffs encourage a well-functioning market.*
  Alberta is integrated with the electric systems of our neighbors. Transmission policy and the regulatory environment facilitate open access to larger markets, while ensuring that Alberta's needs are met.

Alberta's Transmission Policy

In November, 2003, Alberta Energy issued a policy paper, *Transmission Development: The Right Path for Alberta,* outlining policy refinements that will ensure consumers are served with reliable, reasonably priced electricity, and to support continued economic growth in Alberta.

Some key points are:

1. The Alberta Electric System Operator is required to do proactive planning and be prepared to expand the grid to meet forecast load growth and into regions where generation is likely to develop.
2. The timing and commitments for transmission and generation projects will be aligned to ensure that they are available at the same time. The policy will also ensure that generators make a commitment and a financial contribution to transmission upgrades.
3. Some changes are proposed to how the costs of transmission should be recovered. Previously, generators have paid half the embedded costs of the electric system. Effective January 1, 2006, these costs will be incorporated entirely into delivery rates charged to consumers.

   This change does not transfer new costs to consumers – they have always paid the embedded costs of the delivery system. However, that infrastructure investment will be fully allocated to the delivery portion of the bill, instead of being partially incorporated into the prices charged for energy.
4. Elimination of internal bottlenecks in Alberta will also allow full use of our interties for import and export. When the internal transmission system is constrained, the existing tie lines to BC and Saskatchewan cannot be fully utilized.

The transmission policy is available on the Alberta Energy website.

Section 2—Beginning the Approval Process

Agencies involved

A number of agencies are involved in granting approvals to build and operate a generating project. They include:

- Local municipal authority.
- Alberta Energy and Utilities Board.
- Alberta Environment.
- Alberta Electric System Operator
- Local distribution company (if applicable)
- Transmission facility owner (if applicable)

To ensure that necessary approvals are obtained in a timely manner, applicants should contact each of the necessary agencies. When consulting with each agency, applicants may be asked to provide information about their proposed project. In turn, approval granting agencies will:

- Provide information about their approval processes and identify the required approvals and application forms.
- Provide information to help in estimating project timelines and costs.
- Assist the applicant to begin the process to bring new generation into service.

Chart A gives an overview of the agencies involved in the approval process for new electric power generating facilities.

Municipalities and Local Authorities

A suggested first step in the approval process is to consult with the municipality, local district or county in which the proposed facility would be located. Municipalities and local authorities zone for land use and grant building permits and right-of-way access. Applicants may be required to complete an application process prior to receiving approval from local authorities.

Applicants should consult with local authorities to understand their approval process for land use and to obtain building permits and right-of-way access. Zoning rules, permits and other permissions may vary from one local authority to another. Consult with the local authority where the new power generating facility is to be constructed in order to:

- Obtain information on the application process.
- Determine land use and right-of-way requirements.
- Obtain building permits.
- Identify the need for landowner consultation.
- Determine requirements related to bringing electric power lines across municipal roadways and waterways.

- Obtain information on noise by-laws and other local requirements.

The Alberta Energy and Utilities Board (EUB)

The EUB grants approvals for construction, connection and operation of new electric power generation and transmission facilities in Alberta. Before considering an application, the EUB encourages prior approval of the project from local authorities on land use and right-of-way authorization and approval on environmental matters from Alberta Environment (if applicable). The EUB requires that local, landowner and land-use issues be resolved before approval can be issued.

Consultation with the EUB:

- Provides the EUB with early notice of a potential application for approval to construct new generation facilities.
- Provides the applicant with information about the application and approval process and information requirements.

Inquiries about the approval process for new power generating facilities should be directed to the EUB Utilities Branch. View the EUB website. Also see "Directive 28 – Applications for Power Plants, Substations, Transmission Lines, and Industrial System Designations" (formerly Guide 28) on that website.

Alberta Environment

Alberta Environment is responsible for protecting Alberta's air, water, fish, wildlife, forests, land and parks and human health. Consultation with Alberta Environment:

- Provides Alberta Environment with early notice of a potential project and time to evaluate which requirements may apply.
- Provides applicants with information about the Alberta Environment approval process, including whether an Environmental Impact Assessment (EIA) report is required.
- Identifies potential environmental issues associated with the project.
- Identifies requirements for public consultation.

Alberta Environment has offices across the province. Office locations and other information are available on the Alberta Environment website.

Alberta Electric System Operator

The AESO provides system access to Alberta's interconnected grid and to the market in which energy is traded. Applicants should consult with the AESO to:

- Identify opportunities and locations for new generation along with possible transmission tariff implications such as credits or charges.
- Obtain information on the application process for transmission system access and the technical requirements for interconnection.
- Obtain preliminary cost estimates for transmission system access.

- Find out requirements for participating in the AESO power pool market.
- Find out the process and requirements for registering the new generating unit.
- Find out requirements for operational data (SCADA) metering.

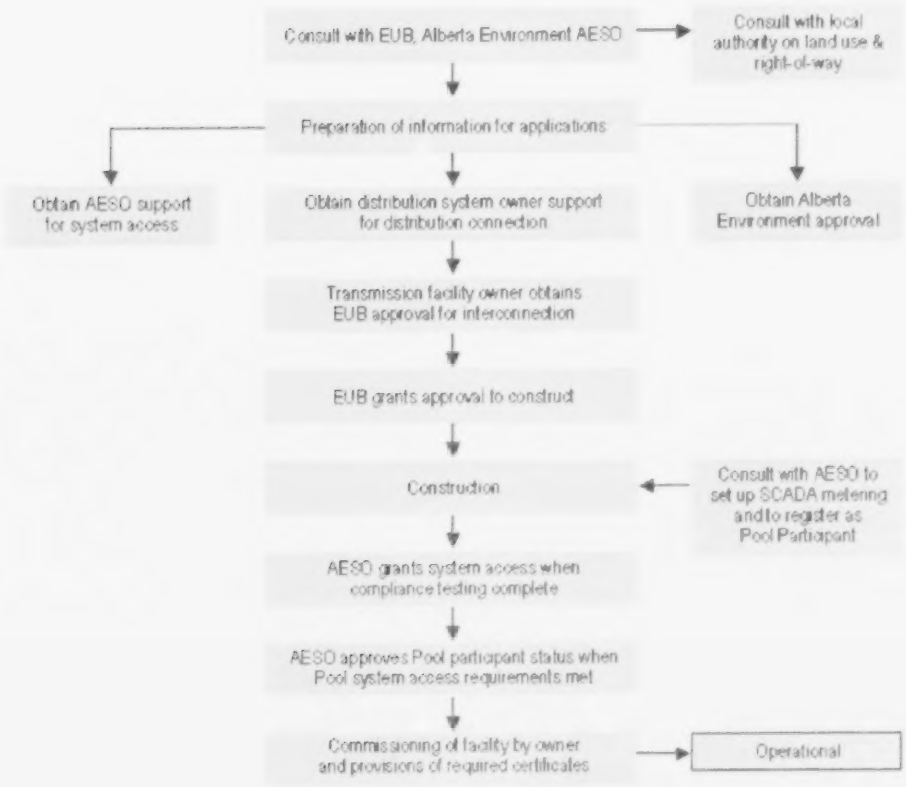
For information, contact the AESO website, or AESO First Call at 1-888-588-AESO (2376)

Local Distribution Company

Applicants intending to sell power into the market by using the interconnected transmission grid will need to obtain connection to the system through the local distribution system. The local distribution company will provide applicants with information on how to obtain distribution connection service.

Contact the local distribution service provider in the area where a project will be located.

Chart A — Overview of the Approval Process


Consult with EUB, Alberta Environment AESO
Consult with local authority on land use & right-of-way
Preparation of information for applications
Obtain AESO support for system access
Obtain distribution system owner support for distribution connection
Obtain Alberta Environment approval
Transmission facility owner obtains EUB approval for interconnection
EUB grants approval to construct
Construction
Consult with AESO to set up SCADA metering and to register as Pool Participant
AESO grants system access when compliance testing complete
AESO approves Pool participant status when Pool system access requirements met
Commissioning of facility by owner and provisions of required certificates
Operational

Time required for approvals

The time required for approval of new electric power generating projects usually depends on two key factors:

- The scale and type of project.
- Whether the applicant uses a coordinated approach to consulting with approval granting agencies.

Although there are some mandatory requirements for all new proposed projects, the approval process typically depends on the scale and type of the proposed project. For example, smaller projects involving mini-turbines, wind generators and other small-scale operations, typically take less time to gain the necessary approvals than larger, more complicated projects.

Similarly, expansion of existing facilities usually takes less approval time than new projects. And projects that create fewer environmental impacts take less time in the approval process than projects creating greater environmental impacts.

Joint application

New facility developers are encouraged to file joint applications to the EUB and Alberta Environment. Joint applications can expedite the approval process and ensure that the facility is commissioned in a timely manner.

Early and coordinated consultation with approval-granting agencies may reduce the time and cost of obtaining approvals. A coordinated approach can also launch an integrated review process so that agencies can cooperate with each other to deliver approvals in a timely fashion. Early consultation to gain public and stakeholder input about the project is also essential to facilitate the approval process.

Factors Affecting Approval Timelines

Planning time usually increases when:

- The project is new and not an expansion of existing facilities.
- The generation capacity is large and the project is complex.
- The project creates potential adverse environmental impacts and an Environmental Impact Assessment (EIA) report is required.
- The applicant has little experience with the approval process.
- Public and stakeholder consultation is extensive.
- A resolution on land use and right-of-way issues is required.
- Business arrangements are complex and require negotiation.
- Issues are raised in response to public notice, which cannot be quickly resolved.

Interconnection time is usually affected by:

- Location – transmission line availability.

- Lead time for large equipment such as transformers and breakers.
- Amount of time needed to obtain support from the AESO and site approvals from the EUB for transmission connection.

Approvals for Small Power Generating Facilities

Smaller projects (i.e., generating facilities of less than 1 MW in rated capacity) may not need to obtain approvals from all agencies.

The EUB has introduced a new one-page form for small generators called "The Application for a Small Generator – Less than 1MW". A pdf version of this form is included at the end of this document as well. The form is also available from the EUB website. (See Directive 28.)

Some smaller projects may not require approval from Alberta Environment. Discuss possible exemptions with Alberta Environment.

Smaller generating units may be 'distribution-connected' – in other words, they are connected directly to lower-voltage local distribution facilities, rather than directly to the higher-voltage transmission system. This may reduce application times and the cost of building transmission facilities.

The AESO also has a fact sheet for distribution-connected customers on its web site, www.aeso.ca. Follow the links under the "Our Company" menu to reach this publication as well as a number of other useful fact sheets.

Section 3— Role of the Alberta Energy and Utilities Board

The Utilities Branch of the Alberta Energy and Utilities Board (EUB) works to ensure that the province's electric industry builds, operates and decommissions hydro developments, electric power plants and transmission lines in an efficient and economic manner. The Utilities Branch is also responsible for managing the approval process for new electric power generating facilities. Chart B outlines the EUB approval process.

The Hydro and Electric Energy Act gives the EUB authority to approve:

- Construction and operation of an electric power generating facility (sec.11).
- Interconnection with the transmission grid (sec. 18(1)).
- Construction of transmission facilities (secs.12-14) and system interconnection (sec.17).
- Construction of a hydro power development (sec. 9(1))
- Operation of a hydro development (sec.10(1)).

The EUB plays a coordinating role in the approval process for power generation projects. It works to ensure that all requirements for approval, along with public consultation, are undertaken by applicants.

Before making a decision concerning an application, the EUB requires applicants to meet the following key requirements:

- Obtain approval from Alberta Environment (if applicable).
- Obtain facility siting approval from the AESO.
- Obtain a facility development permit from the local authority.

The EUB can then proceed to consider the application. It is authorized under the Hydro and Electric Energy Act to issue the following approvals:

- Electric power plant construction and operation.
- Transmission and substation construction and operation.
- Interconnection of power plant with the transmission or distribution line.

Applicants must receive these approvals from the EUB before constructing a power generating facility and before selling electric power into the interconnected system.

Applicants may choose to request all EUB approvals at the same time or at different stages of the project. If Alberta Environment approvals are needed for a project, the applicant is strongly encouraged to request that the EUB consider a joint application process with Alberta Environment.

Documentation Required

Before granting approval, the EUB may request the following documents:

- A summary of all environmental matters addressed, including a copy of the Environmental Impact Assessment (EIA) report if one was undertaken.
- Results of consultation with public and stakeholders
- Confirmation of surface-access agreement with the site land owner.
- Confirmation from the AESO that it supports the application for interconnection (preferred).

Chart C shows the information that applicants with larger projects may be asked to provide to the EUB for approval to construct and connect an electric power generating facility.

Public Notice

As shown in Chart B, the EUB may decide to give public notice on an application to build and operate an electric power generating facility.

The EUB may determine that public notice is not necessary in cases involving mini-turbines, plants situated in remote areas or where extensive consultations with landowners and stakeholders have already been undertaken.

Public notices usually appear in local newspapers and typically provide a minimum of ten days for filing objections.

The EUB considers all objections unless they are determined to be frivolous or vexatious. Applicants are notified of any public objections submitted to the EUB and have an opportunity to contact the concerned parties to resolve the issue.

The EUB then reviews any unresolved objections and may decide to hold a hearing. The EUB has authority to decide whether applicants have adequately addressed objections raised by the public.

All objections following a public notice must be addressed before the approval process proceeds. Before granting approval to begin construction, the EUB will wait until Alberta Environment confirms it is prepared to grant approval.

Noise Assessment

Noise is a public concern. Noise associated with power generating facilities is assessed by the EUB and local authorities. The EUB requires a "Noise Impact Assessment" report (Noise Control Directive ID 99-8) for development of new permanent facilities or modifications to existing permanent facilities, where there is a reasonable expectation of a continuous noise source. The Noise Control Directive does not apply to temporary facilities, which are not expected to remain in operation for more than two months.

The Noise Impact Assessment is intended to ensure that applicants consider possible noise impacts before a facility is built. This can be helpful to applicants since the cost of retrofitting may be significantly greater than the cost of noise mitigation measures included in the initial facility design.

To ensure compliance with the EUB Noise Directive, Alberta Environment requires a noise assessment to be part of the Environmental Impact Assessment (EIA) report. The EIA report is then filed as part of the application to the EUB.

Municipal and local government requirements concerning noise may vary. Applicants should contact their local authority for more details.

Chart B - EUB Approval Process

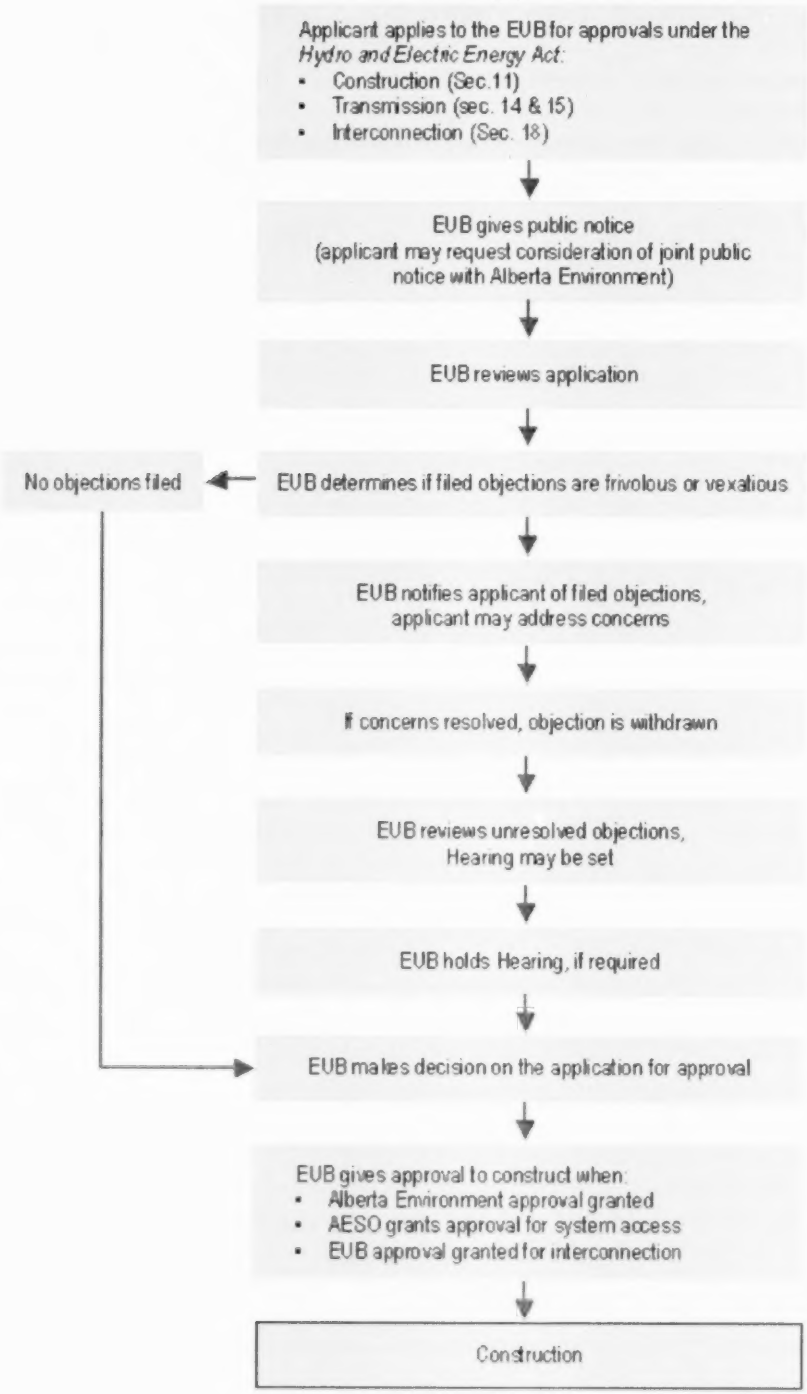

Applicant applies to the EUB for approvals under the *Hydro and Electric Energy Act*:
• Construction (Sec.11)
• Transmission (sec. 14 & 15)
• Interconnection (Sec. 18)
EUB gives public notice
(applicant may request consideration of joint public notice with Alberta Environment)
EUB reviews application
No objections filed
EUB determines if filed objections are frivolous or vexatious
EUB notifies applicant of filed objections, applicant may address concerns
If concerns resolved, objection is withdrawn
EUB reviews unresolved objections, Hearing may be set
EUB holds Hearing, if required
EUB makes decision on the application for approval
EUB gives approval to construct when:
• Alberta Environment approval granted
• AESO grants approval for system access
• EUB approval granted for interconnection
Construction

Chart C - Preparation of Information for EUB Applicants

(See EUB Directive 28)

General Information	a) Name of owner/operator of the plant. b) Description of the proposed project. c) Section of the Hydro and Electric Utilities Act and/or Regulations application is made under.
Facility Details	a) The role/purpose of the plant. b) The legal description of the proposed plant site. c) Summary of project capital costs. d) Facility description including type, size and number of units. e) Fuel used and sources of supply. f) Construction schedule and expected power plant in-service date.
Public Consultation	a) Description of public information programs. b) List of adjacent landowners/occupants or other affected parties. c) Summary of public consultation discussions and what concerns were identified. d) Report of how stakeholder concerns were resolved. e) Confirmation of surface-access agreement with plant site land owner.
Land Use	a) Description of the project regional setting, including existing land use. b) Discussion of potential siting and land use issues.
Environmental Information	a) Summary of potential environmental impacts, mitigation measures and monitoring program. b) Summary of environmental approvals required and applied for. c) Confirmation if an EIA report is required by Alberta Environment. d) Submission of Noise Impact Assessment (EUB Directive ID 99-8).
Technical Operating Information	a) Details of power plant substation. b) Description of load to be supplied from the power plant. c) Estimated plant heat rates and efficiency. d) Fuel requirements of power plant, including fuel type, source, method of handling, transportation and any environmental effects. e) Projected annual electric power production.
Maps and Drawings	a) Plant site drawing with plans showing major power plant components. b) Map/site plan of plant for public notice. c) Electrical single-line diagram showing point of connection to utility.
Transmission Connection	a) Results of preliminary discussions with the AESO on system access. b) Results of preliminary discussions with the owner of distribution or transmission facilities about system interconnection. c) Utility company that plant will be connected to and connection voltage level. d) Legal description of the point of connection.

Section 4—Role of Alberta Environment

Alberta Environment is charged with protecting Alberta's air, water, fish, wildlife, forests, land and parks. The Environment Protection Enhancement Act (EPEA) and its regulations identify activities that require approval.

Steps in the Alberta Environment approval process

The current approval process operates to ensure that potential environmental impacts are identified early in the facility planning process, that potential impacts are satisfactorily mitigated and that opportunities for public consultation are provided.

The Alberta Environment approval process in Chart D shows the route to obtain approval, which consists of five main steps:

- Filing of application.
- Review of the application.
- Public notice.
- Decision by an Alberta Environment Director on whether to issue approval.
- Provision for appeal.

Preliminary Consultation

Environmental review is part of every approval issued under the EPEA to ensure that proposed projects do not cause an adverse impact on the environment.

As part of the preliminary consultation, an Alberta Environment Director will advise applicants about the details of the environmental review process for the proposed project.

After reviewing the application, the Alberta Environment Director may determine that environmental matters can be adequately addressed and that no EIA report is required.

The applicant may then directly proceed to public notice and review for approval.

In special circumstances, the Director may require further assessment of environmental matters. In this event, applicants may be advised that an EIA report is required. Additional details on preparing an EIA report follow later in this Section.

Application for Alberta Environment Approval

The standard information that should accompany applications for Alberta Environment approval is shown in Chart E. The Alberta Environment approval process works in parallel with the EUB approval process to minimize regulatory duplication and ensure that both agencies are aware of the status of each other's approval processes.

Notice of Application

A public "Notice of Application" is required for all new proposed power generating facilities on the mandatory list in the Environmental Assessment (Mandatory and Exempted Activities) Regulation (AR 111/93).

The Notice of Application is typically placed in local newspapers to allow parties thirty days to submit a "statement of concern" about the proposed project. Applicants are notified of all statements of concern and have an opportunity to try to resolve these issues directly with the concerned party.

Issuing final approval

The Alberta Environment Director will make a decision on an application after reviewing the documentation provided and any statements of concern. The Director will consider whether statements of concern have been adequately addressed and whether the approval requirements for the project have been met. Applicants may be asked to address some specific concerns or provide additional information before approval is issued. In some cases, approval may include conditions such as limits on the release of substances or requirements for monitoring and reporting.

Applicants or persons filing a statement of concern in response to the public notice may appeal the Director's decision to the Environmental Appeal Board.

Where the appropriate environmental assessment has been concluded, Alberta Environment issues approval and forwards notice of that approval to the EUB.

Chart D - Alberta Environment Approval Process

Applicant advised if an Environmental Impact Assessment (EIA) is required
Applicant applies to Alberta Environment for approval. Referred to designated Director
See Chart F
Alberta Environment reviews application
No concerns from the Public Notice
Public Notice (applicant may inquire about joint public notice with EUB)
Director notifies applicant of any statements of concern, applicant has opportunity to resolve concerns
If resolved, statement of concern is withdrawn
Director makes a decision
Director issues approval
Applicant or person filing a statement of concern, may appeal Director's decision to the Environmental Appeal Board

Chart E Information required for Alberta Environment Applications

Administrative	a) Applicant name, address and other relevant contact information. b) Location, capacity and size of the project. c) Nature of the activity and any changes, amendments, additions or deletions to the activity. d) If the applicant has applied for approval from the EUB in relation to the activity and the date of the application. e) Confirmation of whether an Environmental Impact Assessment (EIA) report is required. f) Copies of existing approvals or registrations previously issued to the applicant under the EPEA or a predecessor of the EPEA. g) Proposed dates for start and completion of construction and beginning of operation.
Environmental	a) List of substances, the sources of the substances and the amount of each substance that will be released into the environment as a result of the activity or change to the activity; the method of substance release and the steps taken to reduce the amount released. b) Summary of any environmental monitoring information. c) Summary of the performance of substance release control systems used for the activity. d) Justification for the release of substances into the environment as a result of the activity. e) Measures that will be implemented to minimize the amount of waste produced, including a list of the wastes that may be produced, the quantities and the method of final disposition of them. f) Any impact, including surface disturbance, that may/will result from the activity. g) Confirmation that any required emergency response plans will be filed with the local authority where the activity is/will be carried out or with Alberta Public Safety Services. h) Confirmation that contingency plans are in place to deal with an unforeseen release of substances into the environment. i) A conservation and reclamation plan for the activity.
Other Information	a) Description of the public consultation undertaken or proposed by the applicant. b) Information required under any other regulation under the EPEA to be submitted as part of or in support of the application. c) Any other information required by an Alberta Environment Director, including information that is addressed in a standard code of practice or guideline in respect of the activity that is published or adopted by Alberta Environment.

(Source: Approvals and Registration Procedures Regulation (AR 216/96), Sec.3(1))

Environmental Impact Assessments

Is an EIA report required?

Preparation of an EIA report is the most comprehensive form of environmental review. The purpose of the environmental assessment process, as stated in the EPEA (sec 38) is:

- To support the goals of environmental protection and sustainable development.
- To integrate environmental protection and economic decisions at the earliest stages of planning an activity.
- To predict the environmental, social, economic and cultural consequences of a proposed activity and to assess plans to mitigate any adverse impacts resulting from the proposed activity.
- To provide for the involvement of the applicants, the public and government in the review of proposed activities.

Mandatory EIA Reports

The Environmental Assessment (Mandatory and Exempted Activities) Regulation (AR 111/93) identifies activities that require a mandatory EIA report for the construction, operation and reclamation of:

- A hydro-electric power generating plant with a capacity of 100 MWs or greater.
- A coal-fired power plant with a capacity of 100 megawatts or greater
- A transmission line with a voltage of 500 kilovolts (kVs) or greater.

Thermal electric power plants where the exclusive fuel type is natural gas or other gaseous fuels are not required to conduct an EIA. (Previously there had been no requirement for such plants under 100 MW in size to undertake an EIA. A recent amendment now exempts gas-fired plants of 100 MW or greater from the mandatory requirement. The Environmental Assessment (Mandatory and Exempted Activities) Amendment Regulation (AR 88/2000) was approved in May 2000.)

If an EIA report is not mandatory, an Alberta Environment Director may consider a number of related matters in deciding whether an EIA is appropriate including:

- Location, size and nature of the proposed activity.
- Complexity of the proposed activity and the technology to be used.
- Presence of similar activities in the same general area.

Preparing an EIA Report

Chart F shows the steps to complete an EIA.

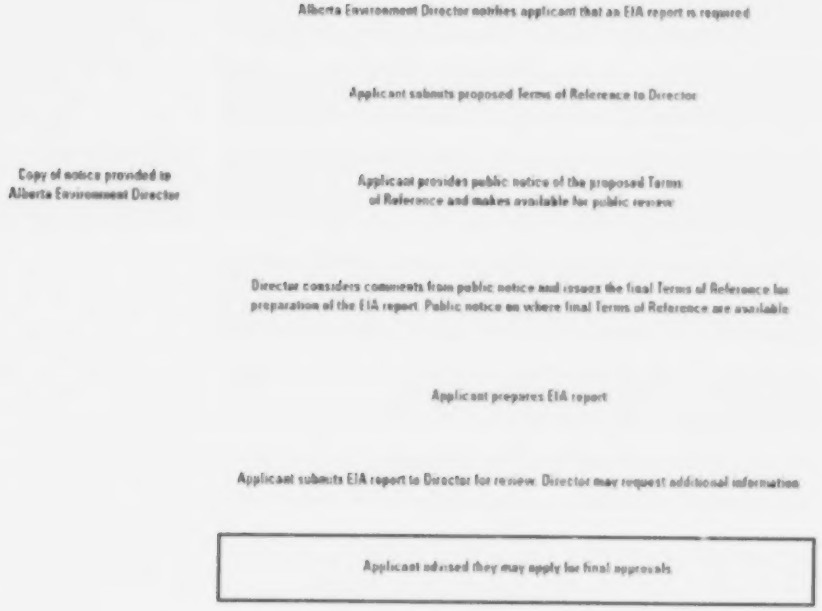
The first step is for the applicant to prepare the Terms of Reference for the EIA report. These terms are reviewed by an Alberta Environment Director and made available for public review and comment.

The Terms of Reference should describe how the EIA report requirements will be achieved and include the following general contents:

- A description of the proposed activity, such as the type of power generating facility.
- Analysis of the site selection procedure, including why the site was selected.
- Identification of existing environmental conditions that should be considered, including a description of potential environmental, social, economic, cultural and health-related effects from the proposed activity and their significance.
- Plans to reduce any potential negative impacts such as the release of substances that may have an adverse environmental effect, plans to monitor the proposed activity, contingency plans to respond to unpredicted negative effects and waste management.
- A plan for public consultation.

When all public comments are received and reviewed, the Director issues final Terms of Reference, which the applicant will use in preparing the EIA report. These final Terms of Reference are also made available to the public. The completed EIA report is submitted to the Director for review. The Director may request additional information to complete the review. The Director may also request the applicant to publish the EIA report.

Chart F - Steps in Preparing an EIA Report


Alberta Environment Director notifies applicant that an EIA report is required
Applicant submits proposed Terms of Reference to Director
Copy of notice provided to Alberta Environment Director
Applicant provides public notice of the proposed Terms of Reference and makes available for public review
Director considers comments from public notice and issues the final Terms of Reference for preparation of the EIA report. Public notice on where final Terms of Reference are available
Applicant prepares EIA report
Applicant submits EIA report to Director for review. Director may request additional information
Applicant advised they may apply for final approvals

Section 5—Role of the AESO

In 2003 the Electric Utilities Act established a corporation known as the Independent System Operator. The Alberta Department of Energy appointed the Alberta Electric System Operator (AESO) to perform this role. The AESO leads the safe, reliable and economic operation and planning of Alberta's interconnected power system. The AESO also facilitates Alberta's hourly wholesale electricity market, which has more than 200 participants and between $3 and $5 billion in annual energy transactions, and is accountable for the overall coordination of provincial load settlement.

Generator involvement with the AESO

Most new generators in the province have to interact with the AESO. Transmission-connected generators go directly to the AESO to obtain grid access, which includes going through the customer interconnection process. The AESO is the sole provider of system access to the interconnected transmission grid and is responsible for ensuring the transmission system is reliable and that access is open and non-discriminatory.

Generators that are connected to local distribution systems at 25 kilovolts or less (distribution–connected generators) must also be registered with the AESO in order to exchange energy. These generators are advised to go to their local distribution company to gain access to the grid as a first step. Then, if the generators wish to sell surplus generation in the wholesale electricity market, the generator contacts the AESO to register as a market participant.

Getting Connected

The AESO currently has a two-stage application process to provide system access to transmission-connected generators and loads. This process applies to generators (and loads) who are building new plants as well as those who are increasing the capacity of an existing one. The AESO Web site, www.aeso.ca, contains a number of documents to help guide transmission customers through the process.

Transmission-connected generators and loads start the interconnection and market access process by having a preliminary meeting with the AESO and then submitting a System Access Application. This application triggers system studies and the development of a Functional Specification, which details the technical requirements of the appropriate infrastructure to support the interconnection project. This process also includes the AESO's submission of a Need Application to the Alberta Energy and Utilities Boards (EUB) to endorse the interconnection and an assessment of whether the generator meets the technical requirements of the Western Electricity Coordinating Council (WECC).

When the EUB approves the Need Application, the AESO directs the appropriate Transmission Facilities Operator (TFO) to apply for Permit and License to construct, own and operate the proposed facilities. Once construction of the proposed interconnection facilities is complete, the generator must satisfy all of the AESO's requirements for energization in order to receive an energization certificate from the AESO.

Once energized, all generating facility applicants must satisfactorily complete compliance testing and model validation of the generating facility before the AESO will issue a "commissioning certificate." The certificate ensures all new system data is gathered and all connection schedules are aligned. Once the commissioning certificate has been issued, a final loss factor is assigned to the generator to capture the impact the generator has on system losses.

In the final phases of the interconnection process (about two months before the energization date), the AESO must also confirm that the applicant has met market participant requirements for trading, including the possible installation of SCADA metering to provide operational data.

When requirements for system access and market participation are met, the applicant is positioned to generate into the transmission system and sell power through the power pool or negotiate a direct sale agreement (Net Settlement Instruction). The AESO sends the generator a monthly transmission bill based upon the AESO's tariff, and a separate pool statement to reflect the generator's involvement in the electricity exchange.

The AESO does not currently have the ability to combine the transmission and energy transactions and therefore requires separate applications for transmission system and market access. Both of these can be obtained by calling AESOfirstcall at 1-888-588-AESO(2376). This is a one-stop information resource for doing business with the AESO. Alternatively, you can contact the AESO by e-mail at info@aeso.ca or on the web at www.aeso.ca.

Evolving Customer Interconnection Process

The AESO has established a collaborative team of industry participants (Generators, Loads, DISCO's, TFO's and Regulators), who are conducting a review of the interconnection process. The AESO intends to implement a new and more efficient process by 2005. Stakeholders will be kept informed of the team's recommendations as the process is revised and redesigned.

Trading energy

The AESO operates an hourly wholesale market, or 'pool', that is available to all generators, distributors, importers and exporters on a non-discriminatory basis. Only registered participants can buy or sell electric power through the spot market or participate in a direct sale. Generators who plan to sell power into the spot market must meet a number of technical requirements and hold a minimum of one digital certificate to provide information to the market in a secure manner, which includes having the minimum computer requirements (hardware and software) to communicate with the pool.

Any party interested in participating in the market must:

- Sign a participation agreement (an agreement to adhere to the AESO's market rules, available on the AESO Web site: www.aeso.ca).
- Pay the annual participation fee (currently $150 plus GST).
- Pay the trading charge proportional to the amount of energy traded by the participant. The 2004 trading charge is 13.6 cents per megawatt hour.

Operations and standards

The provincial rules for the AESO govern operational matters such as making offers to supply power into the pool, scheduling, dispatching and settling for the money owed to generators by purchasers. Other rules cover information exchange, resolution of disputes and ancillary services. These are similar to by-laws that govern the conduct of organizations. The AESO Web site, www.aeso.ca, contains a number of documents to help guide market participants through the process. The Participant Manual consolidates most of the information that applicants need to get started and apply for registration as a market participant.

For more information:

AESOfirstcall 1-888-588-AESO (2376) is your one-stop information resource for doing business at the AESO -- 8 a.m. to 5 p.m. Monday to Friday. Email: info@aeso.ca.

Section 6—Final steps to operation

EUB approval to construct

Delegated EUB staff may approve routine applications. In some cases, an EUB Board Hearing will examine the application and make a decision on approval.

If an application is approved, the EUB issues an approval to construct. At the same time, approval may also be given for transmission and interconnection if applied for, as shown in Chart G.

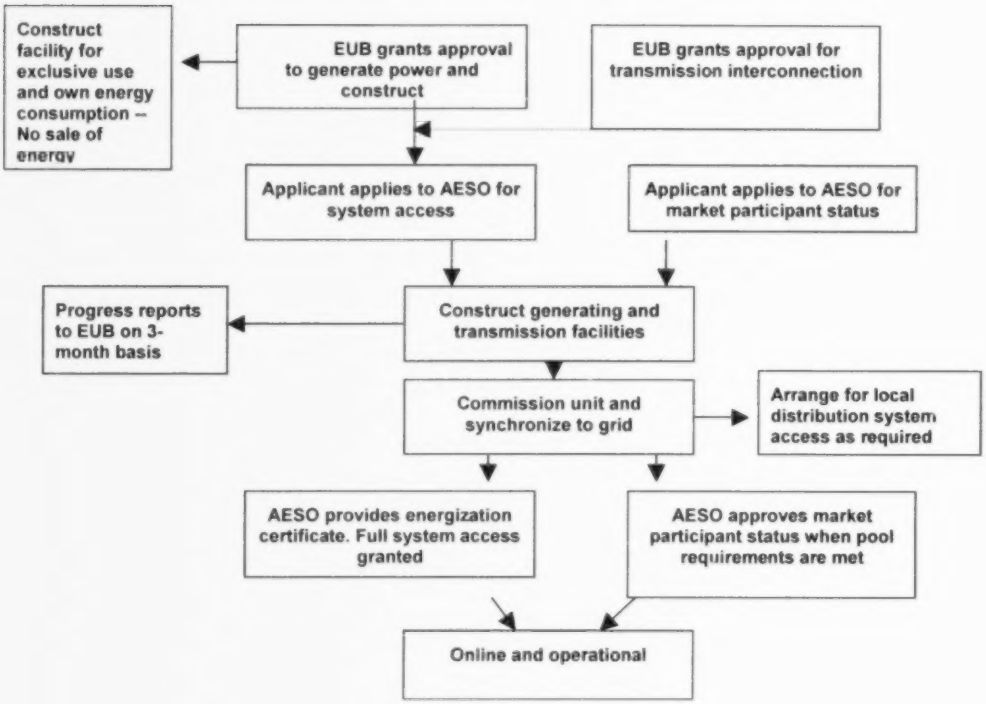
For hydro-electric projects, an Act of the Legislature is currently required before the EUB can approve construction (Hydro and Electric Energy Act, sec.9(7))). This requirement may be reviewed in the future.

Construction and commissioning

Construction of the new generating facility may proceed after the applicant has received approvals from the EUB and Alberta Environment.

When construction is completed, the unit can be commissioned and synchronized to the electrical grid. Compliance testing is required by the AESO and when acceptable, the AESO authorizes full system access service. The AESO also grants participant status for the new generating facility owner once all requirements to access the market are met.

Chart G - Final Steps Towards Operation


Construct facility for exclusive use and own energy consumption – No sale of energy
EUB grants approval to generate power and construct
EUB grants approval for transmission interconnection
Applicant applies to AESO for system access
Applicant applies to AESO for market participant status
Progress reports to EUB on 3-month basis
Construct generating and transmission facilities
Commission unit and synchronize to grid
Arrange for local distribution system access as required
AESO provides energization certificate. Full system access granted
AESO approves market participant status when pool requirements are met
Online and operational

Sources for further information

Alberta Energy

Electricity Division
Alberta Energy
6th Floor, Petroleum Plaza, North Tower
9945 - 108 Street
Edmonton, Alberta T5K 2G6

Telephone: (780) 427-8177
Fax: (780) 427-8065

Website: www.energy.gov.ab.ca

For toll-free access from anywhere in Alberta, dial 310-0000.

To place a call using your TDD equipment for the deaf and hearing impaired, call 427-9999 in Edmonton. Outside Edmonton, call 1-800-232-7215.

Alberta Energy and Utilities Board

Utilities Branch
5th Floor, 640 – 5th Avenue S.W., Calgary, Alberta T2P 3G4
Telephone: (403) 297-8311

Web site: www.eub.gov.ab.ca

Alberta Electric System Operator

Calgary Place
2500, 330 - 5th Ave SW
Calgary, AB T2P 0L4
Telephone: AESO First Call: 1-888-588-AESO (2376)
(403) 539-2450
Web site: www.aeso.ca

Alberta Environment

Alberta Environment Information Centre
Main floor, 9920 - 108th Street Edmonton
Telephone: (780) 422-2079

Web site: http://www3.gov.ab.ca/